PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-203915

(43)Date of publication of application : 27.07.2001

(51)Int.Cl. H04N 5/225
G03B 11/00
G03B 19/12
// H04N101:00

(21)Application number : 2000-013677

(22)Date of filing : 24.01.2000

(71)Applicant : SIGMA CORP

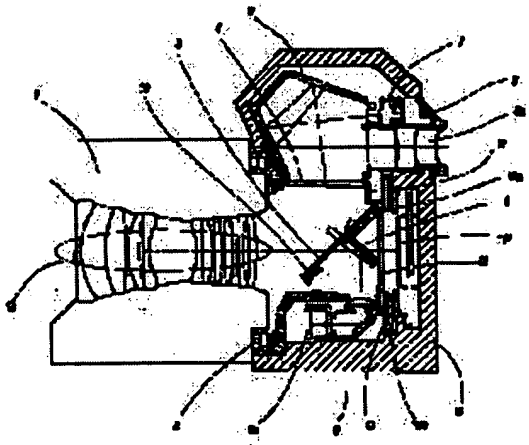
(72)Inventor : SEKI HIROYUKI

(54) SINGLE-LENS REFLEX ELECTRONIC STILL CAMERA

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an electronic still camera which can use common components without greatly altering the structure of an existing camera for silver salt film even when an optical filter characteristic of an electronic still camera is arranged in the optical path.

SOLUTION: A mirror unit 10 is put off the optical axis of the optical system 1a of a photographic lens and luminous flux passes through an optical filter 12 which corrects low-pass effect and spectral sensitivity characteristics and is imaged on a CCD element 14 as an electronic element when a shutter unit 13 opens a shutter curtain 13a to take a picture. The optical filter 12 is arranged between a submirror 8 and the shutter unit 13 above a main axis 10a, and is fitted to a mirror box 11.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The mirror unit which consists of a Maine mirror which changes camera mounting which connects an interchangeable lens, the 1st electronic device which records an image, the light which goes to this 1st electronic device, and the light which goes to a finder, and a submirror which turns light to the 2nd electronic device for automatic focuses, In a single lens reflex camera type electronic "still" camera equipped with the light filter which amends the shutter unit which adjusts the exposure to said 1st electronic device, and the spectral sensitivity characteristic of said 1st electronic device The single lens reflex camera type electronic "still" camera characterized by having arranged said light filter between said mirror units and said shutter units.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the single lens reflex camera type electronic "still" camera in which especially lens exchange is possible about the camera which records electronically the information read by electronic devices, such as CCD.
[0002]
[Description of the Prior Art] Although many single lens reflex camera type electronic "still" cameras are proposed, though many are made based on the camera for silver halide films or being made newly, the circumference of a mirror unit, the shutter unit, etc. are using the common components of the existing camera so that there may be no modification of optical system. This is for making usable the accessories currently used with the film-based camera by common use with the ability making cheaply again by using the existing camera.
[0003] However, it is difficult to constitute optical system only from common components, and components peculiar to an electronic "still" camera are needed. That is because it is general to attach light filters, such as a low pass filter and an infrared light cut-off filter, in order for the electronic device which records an image to consist of CCD generally and to amend the spectral sensitivity characteristic on the property.
[0004] This light filter must be arranged in the optical path from the last lens side of an interchangeable lens to just before CCD.
[0005]
[Problem(s) to be Solved by the Invention] In an optical path, when using the common components of the camera for the existing silver halide films, when a light filter is arranged, there is change of the optical path length by arrangement of a light filter, and accommodation of the optical path length is needed.
[0006] For example, it will become an unproductive situation of a different thing that make adjustment of change of the optical path length who gets up for a light filter correspond in the installation location of CCD, the installation location of AF sensor, the installation location of a finder screen, etc., and **** differs from the camera for silver halide films in the installation location of the optical system of **, AF sensor, etc. if a light filter is arranged between camera mounting and the Maine mirror, although appearance is the same configuration.
[0007] Here, if the optical path length is adjusted by making the thickness of camera mounting which connects an interchangeable lens correspond, communalization of the components of the body of a camera can be performed. However, since they are interlocking mutually electronically and in mechanism, an interchangeable lens and the body of a camera make the components for linkage correspond, and if they are ****, there are. [no] For example, there is it, being a interlocking shaft for AF and being [are an electronic contact, are a pin for lens attachment and detachment, or] a lever for a diaphragm. Many components which cannot become common after all will be generated.
[0008] Furthermore, ********** of the type which the last side of the photography optical system of

an interchangeable lens has projected from the lens mount side has a limit that it cannot be used since the light filter arranged between camera mounting and the Maine mirror is contacted, also about the interchangeable lens with which the body of a camera is equipped.
[0009] Moreover, when the light filter is installed also for what can perform mat exchange of a finder screen in the accessory of the camera for silver halide films between camera mounting and the Maine mirror, a user has to do mat exchange, after removing this light filter, and also has a problem on use of building loss of components, and the cause of breakage.
[0010]
[Means for Solving the Problem] This invention was solved by placing a light filter between the Maine mirror and a shutter in a single lens reflex camera type electronic "still" camera, in order to obtain the single lens reflex camera type electronic "still" camera which does not change optical system, such as AF sensor of the above problems, and a finder.
[0011] That is, the flux of light which entered from the lens is divided into a finder and AF sensor by the Maine mirror and the submirror. So far, it can be made the completely same configuration as the camera for silver halide films.
[0012] Here, according to the above-mentioned configuration, the Maine mirror evacuates from an optical axis at the time of photography, and the light which came from the lens receives light to an electronic device, when a shutter opens through a light filter. The location of an electronic device should change only the amount of the back focus changed with the light filter. Since the point which photography changes from the camera for silver halide films by becoming possible by this is only the attachment location of the electronic device section, many components can be made common.
[0013]
[Example] Hereafter, the operation gestalt of this invention is explained with reference to a drawing. Drawing 1 is the central sectional view of the body of a camera equipped with the interchangeable lens in which the outline of the example of this invention is shown.
[0014] In drawing 1 , a taking lens 1 is exchangeable on the body 15 of a camera by the camera mounting 2. The flux of light which passed along optical-system 1a of a taking lens is divided into the light reflected in the right angle by the Maine mirror 3 which consists of a half mirror, and a transmitted light. Image formation of the reflected light can be carried out on the exchangeable finder screen 4, and it can check by looking the image which carried out image formation through Penn Tami Ra 6 by finder optical-system 5a of the finder unit 5. Moreover, the strength of the light can be measured in the image which carried out image formation also of the AE unit 7 which is photometry equipment through Penn Tami Ra 6 similarly.
[0015] It is reflected by the right angle by the submirror 8 which consists of a total reflection mirror, and by AF sensor 9a of the electronic device of the AF unit 9 which controls an automatic focus, image formation of the light penetrated from the Maine mirror 3 can be carried out, and it can carry out an automatic focus.
[0016] The Maine mirror 3 and the submirror 8 are really constituted as a mirror unit 10, and main shaft 10a passes along them to the mirror unit 10. Main shaft 10a is attached in the mirror box 11 furnished with the driving gear which makes the mirror unit 10 drive, and the mirror unit 10 is the form which is hung and is attached in the mirror box 11. So far, it is realized as the completely same structure as the camera for silver halide films.
[0017] At the time of photography, the mirror unit 10 is evacuated from on the optical axis of optical-system 1a of a taking lens, it passes along the light filter 12 which considers amendment of the spectral sensitivity characteristic as the low-pass effectiveness, and when the shutter unit 13 opens shutter curtain 13a, image formation of the flux of light is carried out to the CCD component 14 of an electronic device, and it is photoed. The light filter 12 here is between ZABUMIRA 8 and the shutter unit 13, and is arranged under main shaft 10a, and is attached in the mirror box 11.
[0018] in addition, in what is limited to the above-mentioned example, there is no this invention and it comes out within the limits of this invention not to mention adding many corrections and modification to the above-mentioned example.

[0019] For example, in the above-mentioned example, although it can amend, either is sufficient and the light filter with another effectiveness which are the low-pass effectiveness and the spectral sensitivity characteristic is sufficient as a light filter 12. Moreover, although the arrangement is also finely instructed to be the bottom of main shaft 10a, you may be behind main shaft 10a that what is necessary is just to become between the Maine mirror 3 and the shutter unit 13. Naturally, by this thing, although installation is also considered as installation to the mirror box 11, you may attach ahead of the shutter unit 13, and may attach in the body 15 of a camera.

[0020]

[Effect of the Invention] Since the effect of migration of the back focus by the light filter serves as only an image formation location of an electronic device by [which were explained above] installing a light filter between the Maine mirror and a shutter like according to the configuration of this invention, the optical-related components used with the camera for silver halide films can use most as it is. Possibility of use [by this thing, / since the structure of a film-based camera becomes remaining as it is / accessories, such as lens exchange, / it is common and] that it will become unnecessary to remove a light filter one by one as natural in the case of mat exchange of a finder screen, and a user will cause problems, such as breakage and loss, has disappeared.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the central sectional view of the camera which applied this invention.
[Description of Notations]
1 Taking Lens
1a Optical system of a taking lens
2 Camera Mounting
3 Maine Mirror
4 Finder Screen
5 Finder Unit
5a Finder optical system
6 Penn Tami Ra
7 AE Unit
8 SubMirror
9 AF Unit
9a AF sensor
10 Mirror Unit
10a Main shaft
11 Mirror Box
12 Light Filter
13 Shutter Unit
13a Shutter curtain
14 CCD Component
15 Body of Camera

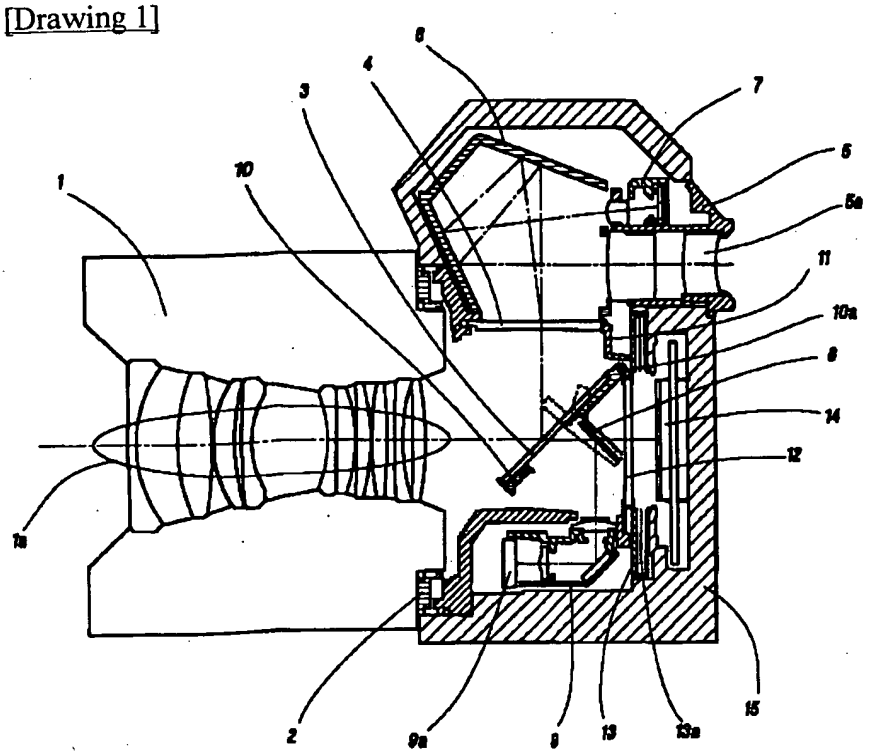
[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

[Drawing 1]



[Translation done.]